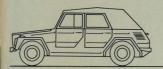
Instruction Manual







Instruction Manual

WW 181

August 1971 Edition

VOLKSWAGENWERK AG. WOLFSBURG

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Dear VW Owner

In the design and construction of the VW 181 the Volkswagen factory has used the experience gained in the manufacture of more than 15 million Volkswagens, Volkswagens which are going through thick and thin in up to 140 different countries.

This led to the production of a genuine multi-purpose vehicle. A vehicle for all those who cannot choose the roads they have to drive over, who have to drive in cross country conditions where there are no roads. A vehicle which will get through where others get stuck.

With its sturdy design and its roomy open body which offers so much additional stowage space, the VW 181 will be the ideal solution to many professional transport problems.

But those who select the VW 181 for their own private use will also find it gives them a great deal of pleasure due to its suitability for "expeditions" well off the beaten track.

Regardless of what you intend to do with your VW 181 we are convinced that it will live up to your expectations and should like to wish you many thousands of miles of happy motoring.

This booklet tells you everything you should know about the operation and maintenance of your VW 181 and the time spent reading it will be well rewarded.

To make it even easier for you we have divided the text into two main parts: The first part deals only with the driving and operating side. This part should be read before taking the vehicle on the road so that you can start off on your first trip with complete confidence.

The second part can, if necessary, be read later on as it contains information about driving in the winter, trailer towing, care of the vehicle and do-it-yourself operations. It also tells you which fuels and lubricants are suitable for your vehicle, how to change the oil and lubricate the various parts and contains a list of interesting technical data.

You quite rightly expect that your VW 181 will give you many years of reliable and economical service, regardless of milage, weather and road conditions. The recipe for a long service life is contained in the Service Record which is the second important publication that you receive with the vehicle.

The Service Record tells you exactly what points you have to watch to maintain the roadworthiness of your car and explains the Diagnosis and Maintenance System which we have prepared for it. It also contains the Warranty Voucher for your car and the conditions on which this voucher isssued.

Always have the Service Record with you when you take the vehicle to a VW workshop — it helps to establish proper contact with the workshop staff.

In your own interest: Have your Volkswagen serviced as laid down in the Service Record right from the start. Proper treatment and complete proof of all maintenance work carried out can be of vital importance if you should have occasion to make a claim under warranty.

Test wiring and socket

VW technology never stands still. Your new Volkswagen has numeros improvements which will help to maintain its reputation as one of the most reliable and economical automobiles.

But not only the vehicle itself has been improved still further — the Volkswagen Diagnosis and Maintenance System is also continuously being modified to keep it in line with technical developments.

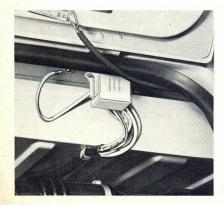
Advanced electronic test instruments which can check many points in the Diagnosis program **automatically** — without the help of the test mechanic — will be introduced. The results of these checks are printed on the test report simultaneously.

To do this, the vehicle is connected to the electronic system of the diagnosis stand by means of a special socket in the engine compartment.

Your Volkswagen is ready for this new system. The vehicle has a special wiring network which is connected to the multi-point socket in the engine compartment shown here.

This socket is used to connect the vehicle to the Diagnosis Stand. Please ensure that the lid of the socket is always closed.

The Volkswagen Diagnosis and Maintenance System is a good thing. It is the most modern automobile servicing system in use today and every effort is being made to keep it constantly in step with technical developments.



Concerning your safety

(Well worth reading before or after studying the rest of the manual.)

For years now our engineers have been leading the field in the development of safe automobiles. Your Volkswagen is the product of this experience

It is now up to you to drive safety. Bear the following points in mind:

- drive carefully and defensively
- match the traffic well ahead
- judge your speed and braking distances properly particularly when tire adhesion is reduced due to rain or snow and ice and
- keep your vehicle in good mechanical condition by having regular maintenance checks carried out by specialists
- make use of the "Volkswagen Diagnosis and Maintenance System". This system has been developed specially to cater for the higher safety requirements of modern road traffic.

For everyday use there are also a few safety measures which no responsible driver should forget:

Before getting behind the wheel -

- check that the tires are in good condition and correctly inflated
- ensure that all windows are clean and unobstructed, particularly in the winter
- check that the headlamps, tail lamps and turn signals are clean
- check that all the lights are working (headlights, turn signals and brake lights only work when the ignition is on.

Before moving off -

- adjust the driving seat so that you are comfortable and can reach all the controls without effort
- set inside and outside mirrors properly

- put your safety belt on and ask all your passengers to do the same
- check that the dual circuit brake warning light is working (if fitted). Ignition must be switched on first
- check windshield wipers (ignition on) and windshield washer
- check that all doors are properly shut.

Before getting into traffic stream -

- check the brakes-after having a good look in the mirror
- make sure that the handbrake is right off.

When on the move -

- keep at a safe distance behind preceding vehicle
- give signals in good time when turning or changing lanes
- don't drive at top speed when it is dark

- switch the low beams on in good time at dusk so that you can be seen by other road users. This also applies in the daytime when it is foggy or snowing
- use fog lamps and rear fog lamps according to regulations
- remember that you have hazard warning lights to use if your car breaks down on a busy road. Always try to get the vehicle off the road as quick as possible when this happens. Place warning triangle on road.
- don't continue driving when you feel tired
- always allow for the carelessness of other road users.

When leaving the vehicle -

protect it against misuse and theft by removing ignition key and locking the steering. Close the windows and lock the doors. Take steps to stop car rolling away especially when parking on gradients.

Identification plate, chassis and engine number

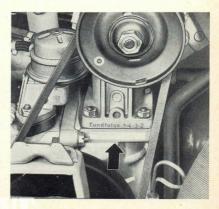
The identification plate is on the front panel under the luggage compartment lid.

The chassis number is stamped in the frame tunnel under the rear seat cushion.

The engine number is on the generator support flange on the crankcase.







Operation

Keys

The vehicle is supplied with two **combined door/ignition keys.** Part of the round portion of the keys is knurled on the edge, so it is possible to tell which way the key is in the dark. When unlocking the doors the knurling must point to the rear and when inserting key in ignition lock it must point downwards.



The **key number** is given on a small plastic tab (A) on the key handle.

When the key number* has been noted in the vehicle documents, the plastic tab shoulds be cut off so that no unauthorized person can order a key.

The **spare key** should be kept somewhere where it will be handy when required, such as in your wallet or in the vehicle document holder.

* A replacement key can be obtained from your VW workshop by quoting the number.

Doors

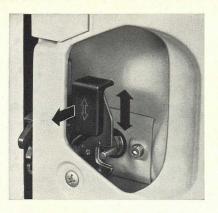
The two front doors can be locked and unlocked with the key



All four doors can also be locked from the inside with the inner door lever when the doors are closed.

- Lift lever door locked
- Press lever down door unlocked

To ensure that the doors can be opened from outside in an emergency, the inner levers should not be lifted when vehicle is moving.



To open the doors from inside pull the levers inwards.

When leaving the vehicle all you have to do is lift the inner levers on all doors and depress the trigger in the outer handle as you close the door.

The doors are then locked.

If the trigger is not depressed as the door is closed the inner lever will be released automatically. This means that the doors cannot be locked unintentionally.

The rear doors can only be unlocked from inside.



Special door features

All the doors can be taken off easily as follows:

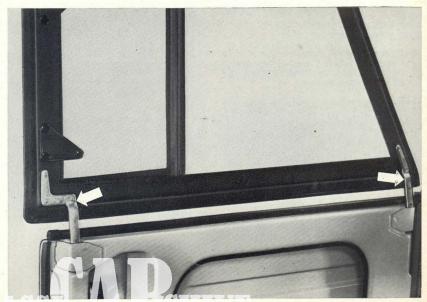
Open the door - press leaf spring forward with one finger - unhook check strap - open door further until it is open more than 90° - lift door up out of hinges.

Caution

In Germany, driving on public roads with the doors removed is not permitted for safety reasons.

Detachable windows

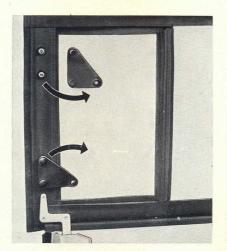
The windows are installed by inserting the pins (arrows) into the holes in the inside upper edge of the door and pressing them down firmly.

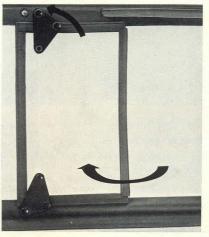


The detachable windows for the front doors have vent wings in them:

To open vent wings:

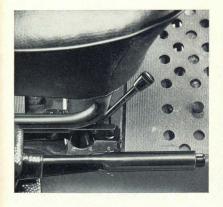
- Detach the press buttons in the tabs.
- Swing the tabs round until they are fully on the window surface.
- Push vent wing out and turn tabs until the press buttons are in line with the buttons on the window frame. Engage the press buttons.





Seats

The VW 181 also has individual seats at the front. The seat and backrest can be adjusted to various positions.





To move seat

Lift the lever on the seat frame at the front and push seat forward or backward. Make sure that the lever engages properly after adjusting the seat so that the seat does not move when you apply the brakes.

To alter backrest angle:

Take weight off backrest and turn the lever at the back of the seat frame.

To tilt backrest forward:

The backrests are fitted with catches to prevent them from tilting forward when the brakes are applied sharply.

The backrests can be tilted forward after lifting the hooks on the seat frame.



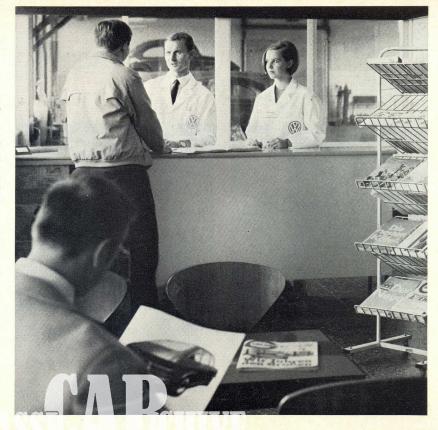
When backrest is pushed back again, the hooks engage automatically.

There are two good things about VW all over the world.
The Volkswagen.
And the Volkswagen Service

You will find VW specialists everywhere. Not just within a radius of a few thousand miles but in 140 different countries. In more than 9000 authorised VW concerns.

You can rest assured that you will find VW Service everywhere — as reasonably priced and reliable as at home. We know, because we supply all VW concerns with everything they require. From the smallest replacement part to the largest special tool.

We don't just wish you pleasant motoring – we do something to keep it that way.

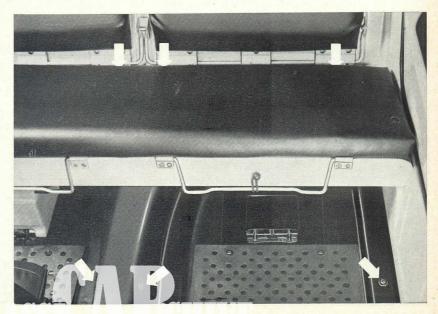


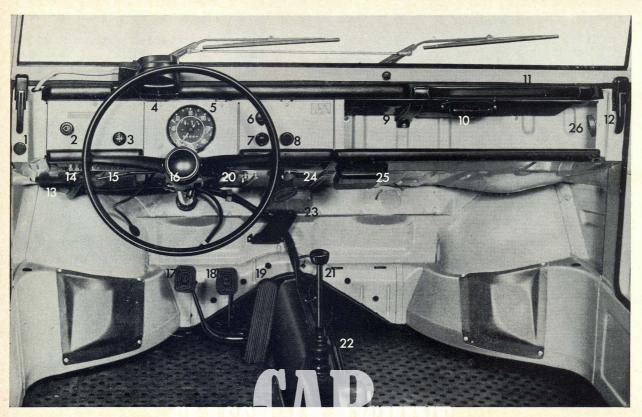
Safety belts

The belts for the driver and front passenger are secured to the side members and on the side of the tunnel in the rear footwell.

The belts for the rear passenger are attached under the seat support at the sides and in the center of the engine compartment cover panel.

Plastic plugs are fitted in the threaded holes for the belt securing screws. These plugs must not be used to secure the belts.





Instrument panel, hand and foot controls

Before using the vehicle for the first time have a good look at the instrument panel and try out the various knobs and levers with the ignition switched on.

1 - Knob for heater temperature regulator	(page 23)	14 – Fuse box (page 53)
2 - Lighting switch	(page 18)	15 - Turn signal and dimmer lever (page 20)
3 - Heater switch	(page 23)	16 - Horn button
4 - Windshield motor		17 - Clutch pedal
$5-\mbox{Speedometer}$ with fuel gauge and warning lights	(page 18)	18 - Brake pedal
6 - Socket (12 volt)	(page 19)	19 - Accelerator pedal
7 - Emergency light switch	(page 19)	20 - Steering/ignition lock (page 20)
8 - Windshield wiper switch	(page 19)	21 — Gearshift lever (page 21)
9 - Parcel shelf		22 – Handbrake (page 21)
10 — Map reading lamp	(page 21)	23 - Brake fluid reservoir (page 26)
11 - Grab handle		24 - Warm air outlet with control lever (page 23)
12 - Locking lever for windshield	(page 32)	25 – Ashtray (page 21)
13 - Air intake hole for heater		26 - Release loop for luggage compartment lid (page 24)



Lighting switch

The lighting switch is a two stage push-pull switch.

1st stage - parking lights, license plate light, tail lights, instrument lights.

2nd stage - headlights as well.

The instrument lights are controlled in brightness by turning the lighting switch knob after pulling it out to 1st or 2nd stop.

Please note:

To prevent the battery from being run down unnecessarily if you park the vehicle and forget to switch the headlamps off and to ensure that the full battery capacity is always available for starting, the headlamps are now wired through the steering/ignition lock:

- the headlamps work only when the ignition is switched on
- the headlamps go out when starting the engine

The parking lights and other lights operated by the lighting switch are not affected.



Speedometer with fuel gauge and warning lamps

The following warning lamps are in the speedometer dial:

a - red - generator and cooling

b - red - engine oil pressure

c - green arrows - turn signals

d - blue - high beams

Fuel gauge:

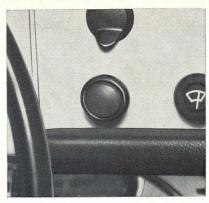
When the needle is on the 'R' mark there are about 5 liters (1 gallon) left in the tank.



Socket

The 12 volt socket can be used to plug in electrical items such as handlamps and spot lamps.

The battery can also be charged with a small charger via the socket.



Emergency light switch

To switch on, pull switch out. A warning lamp in the knob comes on.

When the system is switched on all four turn signals flash at the same time. The system is used to warn other road users of a dangerous situation when moving or that the vehicle has broken down and is stationary. Regulations governing the use of this type of warning system vary from country to country.

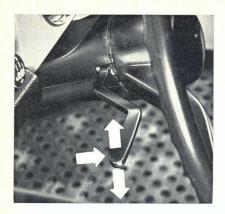
The emergency light system remains in operation when the ignition is switched off.



Wiper switch with button for washer system

The two-speed wipers are switched on by turning the switch. The wiper blades park automatically when switched off.

When you press the button in the switch, the windshield washer sprays water on to the windshield.



Turn signals and dimmer lever

- Lever up right turn signals
- Lever down left turn signals

The turn signals are cancelled automatically after taking the corner.

To signal slight changes in direction such as when lane-changing, the lever need only be moved until a slight resistance is felt and held in this position (the warning lamp must blink). When released, the lever springs back to the central position automatically.

 Lifting lever towards the steering wheel switches the headlamp beams up and down.

A blue warning light in the speedometer dial shows when the high beams are switched on.

To flash the headlamps, lift the lever briefly towards the steering wheel.

The headlamp flasher works when the parking lights are on or when no lights are on.



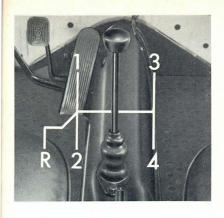
Steering/ignition lock

- 1 Ignition off Steering locked*) key can be withdrawn
- 2 Ignition on steering free
- 3 Starting

If the ignition key is difficult to turn in the lock or cannot be turned at all, move the steering wheel to and fro slightly to release the locking pin.

* The steering is not locked until the key has been pulled out and the wheel turned until the locking pin engages.

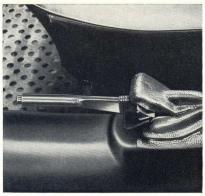
Remove key from lock only when vehicle is stationary





Shift into reverse gear only when vehicle is stationary. Reverse gear has a lock so that it cannot be engaged unintentionally.

 To engage reverse, place lever in neutral, press it down firmly, move it over to the left and pull it back to the stop.



Handbrake lever

To release the lever, pull it up slightly first and then depress the locking knob.



Map reading lamp

To switch lamp on, push the small shade up. The angle of the light from the lamp can be varied by moving the shade.

To switch lamp off, swing shade right down.

Ashtray

To empty the ashtray, press the leaf spring in the ashtray down and pull ashtray out.

Interior trim

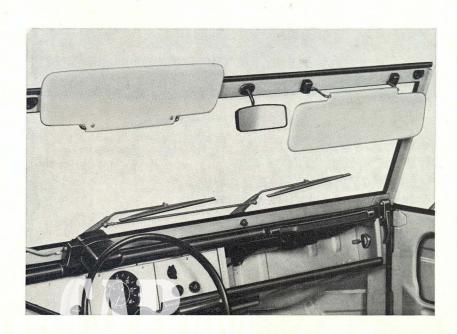
Rear view mirror

The mirror arm springs out of its mounting on impact. To install it again, press it firmly into the mounting.

See also "Windshield", page 32.

Sun visors

Both sun visors are attached to the windshield frame with wire bows. The visor height can be altered by moving the wire bows.

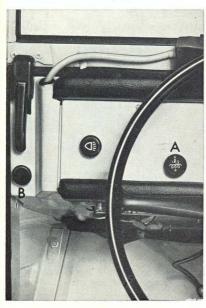


Heating

The VW 181 has a gasoline heater which works independently of the engine (fuel consumption: 0.2-0.6 liter/hour) and can also be used when the vehicle is stationary.

When driving

To switch heater on, turn knob (A) to the right until switch engages.



The green warning lamp in the switch knob then lights up.

To switch heater off, turn knob to the left. The warning lamp will then go out.

When stationary — Vehicle engine not running.

- To switch heater on, turn knob (A) fully to the right. The warning lamp will then light up.
- Switching heater off.

The clockwork mechanism in the switch turns the heater off automatically after about 30 minutes and the warning lamp goes out.

In this time the clockwork mechanism turns the switch back to the engaged position. If the engine is started with knob in this position, the heater will switch on automatically and work until the ignition is switched off.

The heater can be switched off at any time when vehicle is stationary by turning the knob of the time switch to the left to the engaged position or fully to the left to the zero position. The clockwork mechanism will then run down on its own.

- To regulate the temperature, pull knob (B) out. The further the knob is pulled out, the hotter the air from the heater will be.
- To control warm air to front footwell
 Push lever down warm air jet open.
 Push lever up warm air jet closed.
 When the jet is closed, all the warm air
 goes to the windshield.



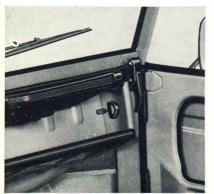
Important - Please note:

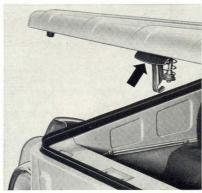
- When the heater has been switched off, the combustion air fan continues to run for a short time to cool the heater down quickly. This is known as the "run-on".
- The heater must always be switched off when the fuel tank is being refilled and in enclosed spaces but it is not necessary to wait until the "run-on" period has finished.
- 3. To avoid running the battery down too much, do not switch the heater on several times consecutively. This is important at low temperatures when the full battery capacity is required to start the engine.
- 4. When the heater is not used for long periods, deposits from the fuel can settle in the heater fuel system and can cause trouble when heater is put into use again. This can be avoided by switching the heater on briefly about every two months when it is not in regular use.

Luggage compartments

Front compartment

A loop is fitted on the right above the parcel shelf to release the hood lock.







- To unlock hood, pull the loop. The hood will spring up slightly.
- To open hood, press the grip to release the hook and lift hood.
- To support hood, lift the support on the right side panel and insert it into the hood.

The following parts are in the front luggage compartment:

1. Container for windshield washer

The windshield washer is operated with compressed air from the spare wheel (maximum pressure 3 kg/cm²/42 psi). A special valve in the container cap cuts off the supply of air to the washer when the pressure of the supply of air to the washer when the pressure of the supply of air to the washer when the pressure of the supply of air to the washer when the pressure of the supply of air to the washer when the pressure of the supply of air to the washer when the pressure of the supply of air to the washer when the pressure of the supply of air to the washer when the pressure of the supply of the supply of the supply of the supply of air to the washer when the pressure of the supply o

sure in the spare wheel has dropped to about 2 kg/cm² (28 psi) so that the wheel is always usable.

Filling container:

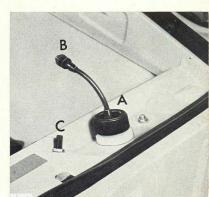
Take cap (A) off and fill container until it overflows. Clear water alone is often not adequate to ensure that the windshield is cleaned quickly and properly. It is advisable, therefore to add "Window Cleaner" *) to the water. If enough of this cleaning agent is put in it also acts as an anti-freeze solution in the winter. Methylated spirits can also be used as an anti-freeze agent. In this case a mixture of 1 part meths to 3 parts water will protect the water from freezing down to about -12° C (10° F).

Replace cap tightly after filling container.

Check and rectifying air pressure:

Unscrew valve cap (B) and inflate spare wheel to $3 \, kg/cm^2$ with valve (C). Install valve cap again.

*) Volkswagen car care materials, see page 44.





2. Jack

The jack is secured with a clip. Before placing the jack in the mounting, fold the arm down against the tube and raise or lower the arm by turning the spindle until the end of the arm is on line with the mark on the tube. Using the jack is described under "Changing wheels" on page 47.

3. Spare wheel

The spare wheel is secured in the compartment with a quick release fastener.

Taking spare wheel out:

See "Changing wheels" on page 47.



Checking spare wheel pressure:

See point 1 "Container for windshield washer" on page 25.

4. Brake fluid reservoir:

The reservoir is underneath the instrument panel in the front footwell.

It should always be filled up to the ridge round the container. If the level drops below the ridge after the vehicle has been in use for some time, have your VW Dealer check the brake system.

Brake fluid is hygroscopic. As too high a water content in the brake fluid becomes detrimental to the entire brake system after a period of time the brake fluid has to be renewed every two years. Afterwards the brake system must be bled.



5. Protective case for detachable windows

When removed, the windows should be put in this case and stowed in the front luggage compartment. In the case the windows are protected against damage.

6. Cover for windshield

For safety reasons the cover must be put over the windshield when driving with the windshield folded down. See also page 32.

7. Caps for top linkage

The caps are also a safety measure for use when driving with the top down. They must not be forgotten.

Tools

The tool roll is in the front luggage compartment.



Rear compartment and load surface

Behind the rear seat is a luggage compartment -A — which can be enlarged to form a load surface -B — by folding the backrest forward.

- Release backrest by pulling the hooks (1) at the side and fold backrest forward.
- Pull the backrest hinges up (2).

- Push the backrest firmly to the rear until it engages the retaining hooks.
- Swing support bar up (after releasing rubber loop) and press the two backrest clips down on to the support bar (4).



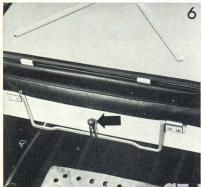










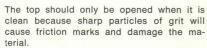


To move the backrests to the normal position, proceed as follows:

- Lift backrest slightly to pull the clips off the support bar.
- Pivot backrest fully up and swing the hinges down 180° (5).
- Press backrest firmly to the rear until you hear the retaining hooks engage.
- Turn support bar down and secure it with the rubber loop (6).

Opening and closing top*)





To open the top:

- Open all doors or take the windows off.
- Pull locking levers down and release the top from the hooks (1).
- Release the six retainers on the top frame (2).
- Pull the textile tabs out of the loops on the body sides only and take top off the loops (3).
- Lift the top slightly and at the same time press the top frame down on both sides near the hinges.







^{*)} Two persons are required to open and close the top properly.

Lay the top frame back and pull the top out to the rear folded double. Fold the overhanging parts of the top inwards.



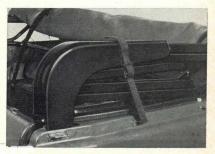


- Take the top forward again and then lay back so far that the plastic window is covered.
- Secure the top with the two straps.





- Push protective caps on to the ends of the linkage so that the buckles are outwards.
- Pass the straps out between the first and second bow, through the nearest loop and secure.



To close the top

- Open all doors or take the windows off.
- Take the caps off the linkage.
- Release the straps and unfold top to the rear.
- Pull linkage forward and press the top frame up at the same time.
- Place front bow of top frame on the windshield frame.
- Place the holes in the top over the loops on the vehicle sides and insert the textile tabs.
- Engage the six retainers on the top frame.
- From inside the vehicle, pull the top frame down on to the windshield frame until the fasteners can be engaged on the holes.
- Push the locking levers up firmly over center.

- Take inside mirror off by turning the arm sharply to the side until it comes out of bracket. Place mirror in parcel shelf.
- Fold sun visors down on to glass.
- Release the fasteners on the instrument panel by lifting the levers and detach fasteners from hooks, on windshield frame.



- Install the windshield cover, watching the cut-outs for the wiper motor and the retaining pins.
- Lower windshield slowly down on to front hood, pulling the cable for the wiper motor out of the hole in the instrument panel at the same time.
- Press the two pins on the windshield frame into the mountings on the front hood.
- Secure the fasteners to stop them rattling.



To raise windshield

- Lift the windshield by jerking the pins out of the mounting on the front hood.
- Raise windshield slowly and push the wiper cable back into the hole in the instrument panel.
- Open the fasteners and attach them to the hooks on the windshield frame.
- Secure fasteners by pressing the levers down.
- Install inside mirror by inserting the arm at the bottom first and then pressing in firmly at the top until retaining spring engages and then adjust mirror.

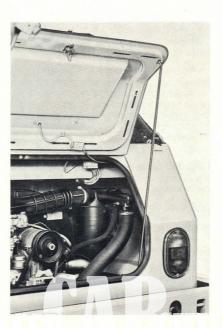
Windshield

When the top is open, the windshield can be hinged forward.

Engine compartment lid:

The lid is secured with a spring catch.

- To open lid, press button above lid handle.
- To support lid in open position, swing the support rod up and engage it in hole in lid.



What to check

A short vehicle check before moving off should be a matter of course for every responsible driver:

Fuel

The fuel gauge in the speedometer only works when the ignition is switched on (see page 18). The tank holds about 40 liters.

The tank filler neck is on the righthand side of the vehicle above the fender. The cap is a bayonet fitting and is turned to the left to open.



Brakes

The brakes should be applied once or twice just after moving off to see that they are working properly.

- 1. All brakes are subject to a certain amount of wear which is shown by a gradual increase in the amount of pedal free travel. It may be necessary to have the brakes checked in a VW workshop in between the normal maintenance services. This applies particularly to vehicles which are driven mainly in city traffic or used for cross-country work.
- 2. If the pedal free travel increases suddenly, one of the two brakes circuits may be defective.

The dual circuit warning light* will show this by lighting up during operation of the brakes. You can still continue to get to the nearest VW workshop but be prepared for longer braking distances on the way.

If the lamp lights up when driving and the brakes are not being used, there is a defect in the electrical system.

Vehicle lighting

The vehicle lights must always be in working order. Check them as follows:

With ignition off:

 Pull switch out to first stop — The parking lights, tail lights, license plate light and instrument lights should come on.

With ignition on:

- Pull switch out to second stop The headlights should come on as well.
- Move turn signal lever The front and rear turn signals should work.

If a turn signal is defective, the warning lamp in the speedometer dial flashes much quicker than usual or not at all.

 Depress brake pedal — The brake lights should come on.

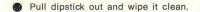
The dual cicuit warning light is also tested by switching on the ignition. If the lamp does not light up or fails to go out when the engine has been started, there is a defect in the electrical system. Take the vehicle to the nearest VW workshop.

^{*} Optional extra

Engine oil level

The vehicle must be on a level surface when the oil level is checked otherwise the dipstick reading will be inaccurate.

After stopping the engine, wait about 5 minutes to give the oil in the engine time to drain down into the crankcase.



Push dipstick back in again as far as it will go, pull it out and check oil level.

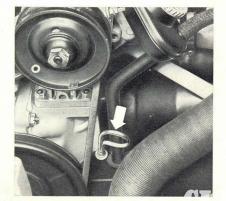
The oil level should be between the two marks on the dipstick and must never be below the lower mark.

Use only good brands of gasoline engine HD oil when topping up. See instructions on page 62.



Incorrect pressures shorten tire life and have a detrimental effect on vehicle road holding.

The tire pressures for the VW 181 are given on page 72.



Starting the engine

(see page 20 for key positions)

Before turning the ignition key, make sure that the gear shift lever is in neutral.

Starting engine at temperatures above freezing point:

(or when the engine is still warm)

Depress accelerator pedal slowly while operating the starter. When the engine is very warm, depress pedal fully but do not "pump" it.

Starting engine at temperatures below freezing point:

(or when engine is cold)

Depress accelerator pedal fully once and then release it slowly so that the automatic choke can work.

Then switch ignition on and start immediately.

As soon as the engine starts, release the ignition key so that the starter is switched off.

Do not try to warm the engine up by running it at idling speed with the vehicle stationary — drive off straight away, but do not race the engine while it is still cold.

The non-repeat lock in the steering/ignition lock prevents the starter from being operated when the engine is running and thus being damaging. Before the starter can be operated again, the ignition has to be switched off.

Be careful when running the engine in a confined space! Danger of poisoning!

Warning lamps

The warning lamps in the instrument panel which come on when the ignition is switched on, should go out when the engine is started. If a lamp comes on when you are driving, note the following points:

Generator warning lamp

Stop at once, switch engine off and check the belt (see page 79). When the belt is broken, the engine is no longer cooled properly.

If the belt is not broken, take the vehicle to a VW workshop as soon as possible because the battery will soon run down.

Oil pressure warning lamp

 Stop at once, switch engine off and check the engine oil level. Add oil if necessary (see page 35).

If you cannot see what is wrong, get expert assistance as soon as possible.

An occasional flickering of the warning lamp at idling speed after a spell of fast driving is quite harmless if the light goes out when accelerator is depressed.

Driving hints

There are no running-in restrictions for the Volkswagen so you can drive your VW 181 at full speed from the first day.

Please note that new tires do not give maximum adhesion and should be run-in for a 100 km at medium speed. New brake linings should be run-in as well. Avoid emergency stops, as far as possible, during the first 200 km.

The permissible speed ranges for the various gears are:

1st gear 0-23 km/h	(0-14 mph)
2nd gear 10-42 km/h	(6-26 mph)
3rd gear 25-72 km/h	(15-45 mph)
top gear 45-110 km/h	(28-68 mph)

The maximum speeds for brief full throttle acceleration such as when overtaking are

2nd gear up to 50 km/h	(30 mph)
3rd gear up to 80 km/h	(50 mph)

The fuel consumption and the tire and brake lining wear depends to a great extent on the mode of driving.

You can drive very economically between

15 and 35 km/h in 2nd gear (9 and 12 mph) 30 and 60 km/h in 3rd gear (18 and 37 mph) 45 and 85 km/h in top gear (28 and 53 mph)

Correct use of clutch, gear lever and brakes is essential to ensure that these hardworked vehicle parts function reliably for a long time.

Clutch

- Always depress clutch pedal fully when changing gear.
- Slip clutch as little as possible when moving off and changing gear.
- Do not use the clutch pedal as a "footrest" for your left foot when driving.

Gear lever

Release lever immediately after changing gear:

The pressure of your hand on the lever is transmitted to the shift forks in the gearbox and can cause premature wear on the flanks of the forks in time.

Brakes

- Apply the brakes in good time and do not brake too hard — locked wheels increase the stopping distance.
- Water reduces the coeficient of friction of the linings, (the linings can get wet when driving through water and when washing the vehicle.) When the brakes are then applied the first time they will not be fully effective.
- Keep at a safe distance behind the preceding vehicle particularly when the roads are wet and slippery.
- When going down steep hills, change down in good time to use the braking effort of the engine and relieve the brakes.

Winter operation

The air-cooled engine of the VW 181 will always start readily even in the winter. Do not, under any circumstances, cover up the air slots at the rear of the vehicle. These slots must always be clear so that air can flow freely to the carburetor and engine cooling fan.

SAE 30 engine oil will tend to thicken at temperatures around freezing point and may cause difficult starting. As soon as winter temperatures are expected change over to a thinner grade of engine oil.

Details of oil changes for winter conditions are given on page 64.

The correct oil viscosities to use in all temperatures are listed on page 62.

SAE 90 transmission oil can generally be used all the year round. Only in areas with arctic temperatures is it necessary to use a thinner oil.

Recommended oils for arctic operation are given on page 63.

The battery capacity also decreases as the temperature drops.

A very cold battery has only a fraction of the capacity that it has at normal temperatures.

The current consumption is also higher in the winter due to the increased load when starting and the more frequent use of lights and other electrical components. We recommend, therefore, that you have the battery checked in a workshop from time to time during the winter and charged up as necessary. More details on battery care are given on page 54.

The spark plugs should not have excessively large gaps especially in the winter. The gap should be 0.7 mm (0.028 in).

The door locks can freeze up in winter if water gets into the lock when washing the vehicle so do not aim the water jet directly at the locks. It is a good idea to cover the keyholes up beforehand.

A frozen door lock can be thawed out easily by using a lock defreezing agent such as offered in the VW car carematerials. This solution has a preservative effect so that the lock cylinder is not damaged even if the solution is used often. It does not damage the paintwork either.

Door lock de-freezer plastic bottle
(100 cc) 000 090 106

Door lock de-freezer
spray (16 cc - pocket size) 000 096 107

refill for 000 096 107 (300 cc)

000 096 108

Frozen windows can be sprayed with cur defroster spray. After the spray has worked for a short time, the ice can be wiped off.

Defroster spray (300 cc) 000 096 109

Icing on the inside of the windows can be prevented by rubbing the windows with the defroster cloth.

Defroster cloth 000 096 110

Tires

Tires with badly worn treads are very dangerous particularly in the winter so ensure that they are replaced in good time. The radial ply tires on the VW 181 have a deep M + S tread which gives good traction in mud and snow. The tires lose their cross-country and winter qualities to a large extent however, when the tread has worn down to a depth of 4 mm.

Better still in the winter are M + S tires with studs which increase the safety margin even on hard snow or ice. M + S studded tires should always be fitted on all four wheels just like normal radial ply tires.

New ${\rm M}+{\rm S}$ studded tires should be run-in at moderate speeds to give the studs time to settle.

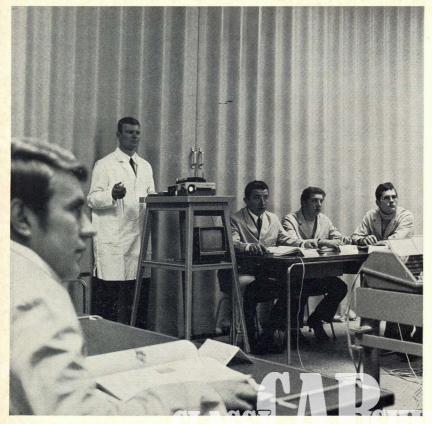
Tire designations, dimensions and pressures are given under "Technical Data" on page 72.

Snow chains

Snow chains which do not stand clear of the tire tread and sidewalls more than 15 mm, including tensioner, can be installed on the driving wheels. The chains offered in the VW Accessories Program fulfil this condition.

When driving over long stretches of road which are free of snow, the chains should be removed. They serve no useful purpose here but merely damage the tires and wear out quickly.

It is a good idea to carry a shovel or a short-handled spade in the car to clear away snow it you get stuck. A small hand brush for sweeping snow off the vehicle and a plastic scraper for the windshield are also useful.



They go to "school" with VW. So that you feel as safe with your VW all over the world as you do at home.

Every year 50 000 specialists are trained in VW service schools. Mechanics, foremen, service advisers from every corner of the world. In small groups of 8-10 they get to know the most modern procedures.

Their knowledge ist extended and kept right up to date by continuous training at their place of of work.

Result of this training: precision in servicing — and less time spent on the work.

For it is not sufficient for a VW workshop simply to produce quality. It does so at reasonable prices.

Trailer towing

Towing a trailer places a considerable strain on the body, transmission, clutch and brakes of the towing vehicle.

In order to avoid damage to your Volkswagen, please note the following instructions and driving rules which are also written with road safety in mind:

- Do not exceed the maximum trailer weight specified for the vehicle.
- The towing bar must be fitted in accordance with the instructions from the Volkswagen factory. Towing bars which are installed in the factory or service installed as VW accessories in a VW workshop fulfil these conditions. Other towing bars should be installed exactly as described in the instructions supplied with them.

Check whether local regulations require the fitting of a towing bar to be recorded in the vehicle documents.

The operation of the trailer turn signals must be shown on the instrument panel with a special warning lamp. When the VW Trailer turn signal/emergency light relay is used, the warning light only works when the trailer is equipped with 21 watt bulbs.

One pin in the 7 pin trailer socket (terminal 54 g) is left free for additional current supply (light for trailer). Please remember the battery capacity when using the lights.

- The pressure of the trailer draw bar on the ball of the towing bar must be 25— 40 kg (55–88 lbs.) and the permissible rear axle load must not be exceeded.
- A second outside driving mirror is essential in most cases. If the trailer is wider than the vehicle, both outside mirrors should be on extending telescopic arms so that a good view to the rear is always obtained.
- Always drive at a moderate speed. In many countries there are speed restrictions for vehicles towing trailers.
- Ensure that the tires have good treads and that the inflation pressures are correct. Keep tires inflated to the pressures for maximum load.
 - It is essential that the trailer tires have the same pressures on both sides. If the vehicle is fitted with studded tires in the winter, trailers with brakes should also be equipped with studded tires.
- Use the clutch carefully when towing. Do not accelerate more than necessary when moving off and never slip the clutch longer than necessary.

- Use brakes in good time and as gently as possible. Practise braking properly with a trailer with over-run brakes: Apply brakes gently at first then brake rapidly. In this way you can avoid the jerking which is caused by locked trailer wheels.
- Change down in good time when going uphill and downhill.
- Trailer towing always puts the fuel consumption up. This is due to the extra weight and the higher rolling and air resistance.
- If driven properly your VW will climb any normal road gradient when towing a trailer. But do not demand the impossible. The hill climbing figures given are for the vehicle with two occupants — but without trailer and it is obvious that these figures must be reduced considerably according to trailer weight.
- Furthermore, the engine output decreases as the height increases due to the drop in atmospheric pressure. When high mountain passes have to be climbed do not tow a trailer of the maximum permissible weight.

Care of car

Even the finest paint requires regular and proper care if it is to retain its gloss over the years. This is easy to understand if you stop to think that the paint is continuously exposed to the influence of sunlight, rain, industrial fumes, soot, dust and dirt.

In the winter, all parts of the vehicle are subjected to even more severe climatic conditions and aggressive salt solutions. It is advisable to clean and wax the vehicle more often at this time of the year.

Every VW Dealership has stocks of car cleaning materials for the Volkswagen. These materials have been tested by us and found to give the best results. The order numbers of these materials are given here.

Washing

Wash vehicle with clear water but do not wash it in direct sunshine.

Rinse sponge often to avoid scratching the paintwork.

If water alone is not adequate, add a shampoo to the water and apply with a sponge or soft brush.

Then rinse vehicle well and dry with a leather.

Tin of shampoo	
(300 cc)	000 096 112
Sponge	000 096 151
Leather	000 096 155
Auto cloth	000 096 150
Brush	000 096 157
Washing gloves	000 096 153
Nylon washing gloves	000 096 160

Waxing

Wax as often as possible. This will prevent dirt from sticking to the paint and industrial grime from penetrating into the paint.

Then wax paint after washing and rub until paint shines again or just put wash/wax solution in second lot of water regularly. Wash with this solution and dry with leather.

Tin of wax	
(250 cc)	000 096 011
Tin of wax	
(1000 cc)	000 096 012
Tin of wash/wax solution	
(150 cc)	000 096 121
Tin of wash/wax solution	
(250 cc)	000 096 122

Polishing N

Should only be done if paint has lost shine and gloss cannot be brought back with wax. After treatment with polish the vehicle must be waxed.

If paint is cleaned with polishing wax it need not be waxed afterwards.

Tin of paint polish	
(250 cc)	000 096 00
Tin of paint polish	
(1000 cc)	000 096 002
Tube of polishing wax	
(210 grams)	000 096 02
Bag of polishing cotton	
(200 grams)	000 096 16
Bag of polishing cotton	
(500 grams)	000 096 162

Patching up paint damage

Small marks in the paint such as scratches or stone damage can be repaired with genuine VW touch-up brushers or spray cans before the marks rust. A sticker in the spare wheel compartment gives the color designation and number of the original finish.

Removing industrial grime

Treat paint surfaces with industrial grime remover as soon as possible.

The solution must be rinsed off very thoroughly. Pay particular attention to seams and joints.

Bottle of industrial grime remover. (500 cc) 000 096 091

Removing tar spots

Treat paint surfaces with tar remover as soon as possible. After treatment rinse traces of remover off with soap powder solution (water and shampoo).

Tin of tar remover (150 cc) 000 096 051 Tin of tar remover (250 cc) 000 096 052

Removing insects

Dried on insects can be cleaned off paint with insect remover.

Wash surfaces afterwards. Clean dirty windshields with insect sponge.

Tube of insect remover (80 grams) 000 096 081 Insect sponge 000 096 083

Care of chromed parts

Before applying chrome cleaner, the parts must be washed and dried. Then clean with chrome polish from tube.

Chrome paste from the tube contains a preservative so that it cleans and protects the chromed parts.

Liquid chrome protector should be used to prevent corrosion of parts for a long period. Protective film remover is used to remove the film.

Tube of chrome cleaner
(80 grams) 000 096 061
Tin of chrome protective film ¹)
(500 cc) 000 096 063
Tube of chrome paste
(80 grams) 000 096 067
Tin of chrome protective film remover ¹)
(500 cc) 000 096 167

1) It is advisable to use the spray gun 000 096 064 to apply these fluids.

Cleaning leatherette

If not very dirty, clean with soft cloth or brush. If very dirty, clean air-permeable leatherette with liquid plastic cleaner. Apply with absorbent plain cloth. After cleaning, rub area dry with a soft cloth.

Non-permeable plastic material can be cleaned with plastic cleaning paste.

Plastic cleaning paste (200 grams) 000 096 071 Liquid plastic cleaner (500 cc) 000 096 073

The top does not require any special care. It is important however, to clean the plastic material regularly. Spots and marks can be removed best with our plastic cleaner. Paint thinner, chlorine based spot removers or similar solutions are unsuitable for this purpose as they damage the plastic material. The hinges of the top linkage should be cleaned occasionally and a few drops of oil applied. Afterwards it is advisable to wipe the joints dry so that oil does not drip on to the top material.

Cleaning windows

"A'silic" powder

Windows can normally be cleaned with a sponge and warm water and dried with a leather. Do not use this leather for the paintwork because traces of paint cleaner and polish will cause streaks to appear on the windshield.

Insects can be removed with the insect sponge and other dirt, oil deposits etc. with window cleaner.

Silicon, grease and oil can be removed with "A'silic" powder.

Sprinkle powder on screen and rub it off. Silicon remover can be put in the washer to keep the screen clean.

000 961 075

Bottle of silicon remover (120 cc)	000 096 093
Bottle of window cleaner	
(200 cc)	000 096 105
Sachet of window cleaner	
(35 cc)	000 096 101
Insect sponge	000 096 083
Anti-mist cloth	000 096 165
Glass cleaner	000 096 152

Windshield wiper blades

Blades which are clogged with oil and insects should be removed and cleaned with a hard brush and a detergent solution. The blades should be replaced once or twice a year according to condition.

The front seats. If the front seats become hard to slide, the runners must be greased lightly at top and bottom after being cleaned with a cloth. The seats can be removed to do this by pushing them forward out of the runners.

When putting the seats back, hook the return spring in again.

Airing the body

If the vehicle is left in a closed garage for long periods, the garage and car interior should be aired from time to time to prevent the formation of mould and damp stains inside the vehicle.

Tire wear

Due to their design, radial ply tires have a long service life. Exactly how long depends ont the inflation pressures and style of driving. Rapid cornering, violent acceleration and hard braking all increase tire wear. The time of year and the weather also influence the wear rate. Wear is higher in the summer than in the winter because the rubber is less resistant to friction when warm. Note the following tips on tire care:

- 1 Check tires for damage occasionally and remove foreign bodies.
- 2 Keep oil and gasoline away from the tires.
- 3 Replace missing valve dust caps as soon as possible.

Tires should be replaced when the tread depth is only 1 mm all round and on full tread width because this is the absolute limit for safe usage.

The original tires on your Volkswagen are provided with built-in tread wear indicators. These indicators are molded into the bottom of the tread grooves and will appear as approximately ½-inch wide bars when the tire tread depth has worn down to 1.6 mm. There are from 4 to 6 of these bars according to make of tire. When the indicators appear in two or more adjacent grooves, this is a clear sign that the tire is worn almost down to the permissible limit. A tire which is worn to this extent should be replaced

as soon as possible. We advise you however not to let the tires wear down to this extent as tires with treads in this condition cannot grip the road surface properly when driving at high speeds on wet roads.

It is advisable for safety reasons, whenever possible, to renew all four tires at the same time orat least to fit pairs on the axles. For the same reason, only use tires of the same make and tread. New tires should be run-in at a reasonable speed for about 100 km because when first fitted they do not give maximum adhesion.

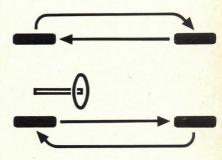
Uneven tire wear is not always caused by incorrect wheel alignment or some vehicle conditions. It is often due to a particular style of driving such as rapid cornering. Incorrectly inflated tires also wear unevenly in time.

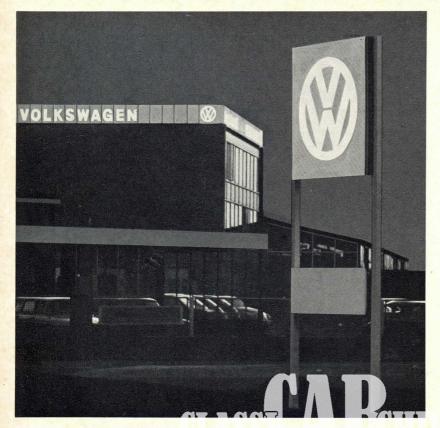
In order to avoid having to replace the tires sooner than necessary in such cases, we recommend that the wheels are changed round as shown here — without altering the direction of rotation. The pressures must then be corrected and the bolts tightened diagonally to 10 mkg (72 ft. lb).

Balanced wheels

For smooth running at high speeds and long tire life it is essential that the wheels are balanced statically and dynamically. As the wheels can get out of balance after being in use for some time due to natural tire wear, the wheels should be balanced again every

10 000 km (6000 miles). Furthermore, a wheel should always be balanced again when a tire has been repaired. This also applies to balanced wheels when a tire has lost pressure due to a faulty valve.





So that you know where to take your car for servicing: Every VW workshop displays the VW sign.

Many other workshop would like to have you as a customer but they are not good enough for your VW. Workshops not authorized by VW cannot offer you the sort of service which you get at a VW shop.

The Volkswagen Diagnosis and Maintenance system, for example.

Trained mechanics with special tools. Rationalized procedures developed by the VW factory. In short — the economic way of keeping your VW in tiptop, roadworthy condition. Year after year.

Do-it-yourself tips

Just in case you have to deal with a small defect or a breakdown yourself one of these days we have included some information on the next few pages which should help you.

All other repairs should always be carried out by one of our service stations. Whenever you see the familiar VW sign on the roadside you can be sure of expert advice and quick efficient assistance.

Changing wheels

Preparation:

- Apply handbrake firmly.
- Take jack and spare wheel out of front luggage compartment

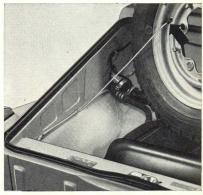
The jack is secured to the front panel with a clip.

The spare wheel is secured with a quick release fastener:

Release the fastener— unscrew wing nut and turn clamp 90° .



Before the spare wheel can be taken out of the luggage compartment, the hose for the windshield washer must be detached from the tire valve.



Taking defective wheel off:

Pull wheel cap off.

Hook the puller into holes in the edge of the cap, place bar through the puller, support bar on the wheel rim and lever to pull cap off.

If there is a bar with a thin end in the vehicle tool kit, there is not a wheel cap puller in the kit. The cap is levered off with the bar as shown.

Lift vehicle.

Insert jack into square hole under body and lift vehicle until wheel is just clear of ground.

Take wheel bolts out and remove wheel.



 Loosen wheel bolts about one turn with socket wrench and bar.



B

A = Turning to right, lifts vehicle B = Turning to left, lowers vehicle

Installing spare wheel:

 Lean the spare wheel against the brake drum

Raise or lower the vehicle slightly as necessary until one hole in the wheel is roughly in line with a hole in the drum.

- Insert one hole and tighten it until the wheel can be moved round this point.
- Lift vehicle again slightly and move wheel about until the other bolts can be inserted.
- Tighten bolts with wrench without bar.

While tightening the bolts, move the wheel to and fro so that it is centered properly by the rounded shape of the bolt heads.



- Lower vehicle fully.
- Tighten bolts evenly and diagonally.

Insert bar into wrench as that maximum leverage is obtained as shown above.

Install wheel cap by giving it a smart blow on the edge with the hand.

Three more points:

1. Have the torque of the wheel bolts checked with a torque wrench as soon as possible after changing a wheel.

The correct torque is 10 mkg (72 lb. ft)

- 2. Do not forget to correct the air pressure in the wheel which has been fitted. The pressures are given on page 72.
- 3. Have the damaged tire repaired as soon as you can because the spare wheel supplies the air pressure for the windshield washer.

Aiming the headlights

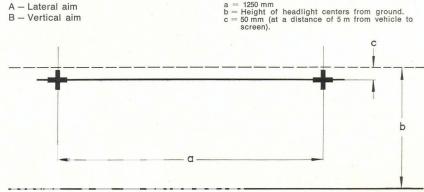
If a headlight aiming device is not available proceed as follows:

Position the vehicle on a level surface 5 m (16 ft. 5in) away from a verticl wall. The center of the rear seat must be loaded with one person or a weight of 70 kg (154 lbs.)

Draw two crosses with setting lines on the wall to the measurements on sketch. The longitudinal center line of the vehicle must be aligned exactly with the center between the two crosses and at right angles to the wall. Aim the headlights individually by turning the screws -A- and -B- in the rim with the low beam switched on. Cover up the second headlight.

The headlights are correctly aimed when the light — dark border line is horizontal on the setting line to the right of the cross and the angle in the light — dark border line is exactly on the cross.





Bulb chart

Bulb for	DIN Designation	VW Part No.
Headlights	A 12 V 45/40 W	N 17 705 3
Parking light	HL 12 V 4 W	N 17 717 2
Turn signal, front and rear	RL 12 V 21 W	N 17 732 2
Brake/tail light	SL 12 V 21/ 5 W	N 17 738 2
License plate light	G 12 V 5 W	N 17 718 2
Warning lights in speedometer	J 12 V 2 W	N 17 722 2
Other warning lights	W 12 V 12 W	N 17 751 2
Map reading light	H 12 V 2 W	N 17 720 2

Replacing bulbs

Headlight bulb

- Remove Phillips screw (arrow).
- Lift headlight away from fender at bottom first then take it off the lug at the top.
- Pull connector off, but do not take off the side light and ground cable.
- Press ring against reflector, turn it to the left and take off.
- Fit new bulb.
 Do not touch glass part of new bulb with bare fingers — use a piece of clean paper or cloth.

The lugs on the bulb holder must engage in the cutout in the reflector.

Install ring so that the contact strip is on the base of the side light bulb.

Install connector. Install headlight. When installing, insert screw first then press the headlight over the top lug and tighten the screw.

Check headlight setting.



Front turn signal bulb

- Remove Phillips screw (arrow)
- Take housing and lens off.
- Press bulb into holder lightly, turn and take out.
- Install new bulb.
- Install housing and lens.

Ensure that the gasket is located properly when fitting housing.

Rear turn signal or brake/tail light bulbs

- Unscrew the two Phillips screws so far that the lens can be taken off.
- Press bulb into holder lightly, turn and take out,
 Top - turn signal
 Bottom - brake/tail light
- Install new bulb.
- Attach lens.

Tighten screws evenly but do not overtighten.

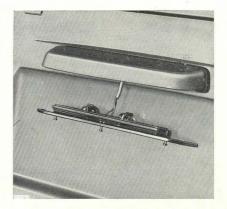
License plate light bulb

- Unscrew the three Phillips screws and take the housing off.
- Press bulb into holder lightly, turn and take out.
- Install new bulb.
- Attach housing.

Do not pinch the cable when installing the housing. Tighten screws evenly but do not overtighten.







Replacing fuses

The fuse box is located under the dashboard on the left of the steering column.

The transparent cover of the fuse box is marked with symbols.



*

Terminal 15 - Wipers, horn, turn signals

Terminal 56a - High beam

▼ Terminal 56b - Low beam

Terminal 58 - Parking light

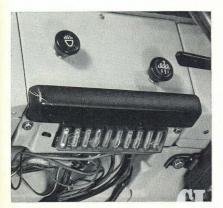
Terminal 30 - Interior light

There is a further 8 ampere fuse for the backup lights * in a holder above the generator in the engine compartment.

When a fuse blows, it is not sufficient to merely replace it with a new fuse. A fuse usually only blows when there is a defect in the wiring or in an electrical component. A fuse very rarely blows because of a slight temporary overload. If a new fuse blows again in a very short time, the vehicle should be taken to a VW dealer and the electrical system checked and repaired as necessary.

On no account should fuses be patched up with silver paper or wire as this can cause serious damage elsewhere in the electrical system.

It is advisable to always carry a few spare 8 ampere fuses on the vehicle.



 1 - Turn signals, windshield wipers, heating

2 - Horn, brake lights

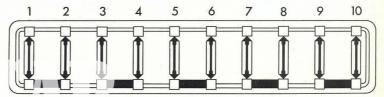
3 - High beam left, high beam warning light 4 - High beam right

5 - Low beam left6 - Low beam right

7 - Tail light right, license plate light, parking lights left and right 8 - Tail light right

9 – Map reading lamp, socket

10 - Hazard warning light system, headlight flasher, heating



^{*} Optional extra

Care of battery

The battery should be checked regularly because the ability of the engine to start readily depends to a large extent on the condition of the battery. To get at the battery, just lift the rear seat cushion on the righthand side. This is done by completely unhooking the second spring which holds the cushion on the frame. The third and fourth are just unhooked at the rear and folded forward.

To check the acid level, remove the plugs. The acid should be kept exactly on the mark. When the level is below the mark top up with **distilled** water. The acid level drops mainly when the vehicle is driven frequently without lights, due to the dissociation of the water used to dilute the acid, and to a lesser extent, to evaporation. In the summer the acid level should be checked about every 8 days. In the winter it need not be checked so often.

The terminals and connections must be kept clean and greased with terminal grease. Ensure that the ground connection makes metal to metal contact with the body.

If you lay the vehicle up for a prolonged period have the battery checked and charged in a VW workshop every four weeks as otherwise it will discharge itself in time and this can damage it.

Removing battery

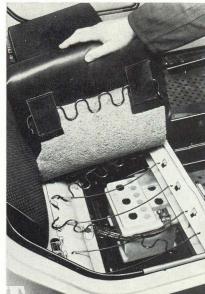
The nut securing the battery can be loosened with the wheel bolt wrench and the jack bar. A 13 mm open-end wrench is required for the battery terminals.

Caution To prevent short circuits always detach the ground strap (-) first but connect the positive cable (+) first.

A short circuit can cause the battery to heat up very quickly and it may burst. Furthermore, the sparks can ignite the gas generated during the charging process.

To avoid damage to the electrical system never drive the vehicle with the battery disconnected. On the other hand, both terminals must be disconnected before quickcharging the battery.





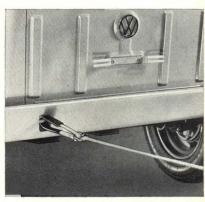
Towing

There are towing eyes in both bumpers.

The maximum tractive effort the eyes will withstand, up to a towrope angle of 20°, is 1100 kg (2425 lbs).

- When attaching the towrope, insert it into the eye from top to bottom.
- The driver of the towing vehicle must use his clutch carefully when moving off and changing gear.
- The driver of the vehicle being towed must ensure that the towrope is always kept taut.





Starting trouble

Volkswagen are reliable. You can keep your car reliable if you have it checked and maintained with the Volkswagen Diagnosis and Maintenance System.

Apart from this, many VW drivers will be pleased to see that this instruction manual contains a trouble diagnosis chart so that if the engine does stop or fails to start some day, it can be checked and often got running again.

The operations are described as done by a skilled mechanic. The source of trouble is located by checking systematically: There should be fuel in the carburetor and there should be a spark at the plugs — the trouble is soon found. It is really quite easy once you know how it is done.

Condition	Possible cause	What to do
A - Starter will not turn engine or turns it too slowly.	1 — Battery run down.	1 — Have battery charged or replaced. Try to start by pushing vehicle (ignition on, clutch out, 2nd gear engaged. When vehicle is rolling, let clutch in quickly) .
	Battery flat, battery cable oxidized or loose.	Have battery charged or replaced. Try to start by towing vehicle (ignition on, clutch out, 2nd gear engaged. Let clutch in slowly at about 20 mph.) Clean battery terminals or tighten them.
		Important
		To avoid short circuits, take ground cable $(-)$ off first and connect positive cable $(+)$ first.
	Starter switch, cables or starter defective.	3 - Push vehicle (see point 1) to start engine and see VW Dealer.
		57

Possible cause	What to do
	Check ignition. Wipe wet cables dry. Pull connector off a plug, and screw connector off cable. Grip cable with piece of dry cloth and hold end about 8 mm from a metal part. Have someone turn engine over (gearshift lever in neutral). A strong spark should jump from end of cable to metal part.
1a - Plugs wet or dirty	1a — If a spark appears, take plugs out. Dry plugs out, clean electrodes with a chip of wood and check gaps. Install new plugs if necessary. If engine still does not start, look for defect in fuel system.
1b — No current at coil	1b — If there is no spark when checking as at point 1, pull the thin black cable (terminal 15) off the tab on the coil, switch ignition on and touch cable end briefly to a bare metal part. There should be a spark. If there is no spark, there is a break in the circuit. See VW Dealer
	Defect in ignition system 1 — Defect in ignition system 1a — Plugs wet or dirty

Condition	Possible cause	What to do
	1c - Coil defective, breaker contacts in distributor faulty	1c — If there is a spark when testing as at 1b, switch ignition off. Take off distributor cap and rotor. Turn engine by v belt until points are fully open. The breaker gap should be 0.4 mm (.016 in). Turn engine on until points are closed and push a piece of thick paper to and fro between the points. Switch ignition on again and open and close points several times with a nonmetallic ob-
		ject. A strong spark should appear between the points. If there is no spark, see your VW Dealer.
	1d — Distributor cap and rotor damp or damaged	1d — If engine does not start even though there is a spark at the breaker points, wipe cap and rotor with a clean cloth and check for damage, cracks and bur- ning. The carbon brush in the cap must spring up again when pressed in and must not be broken.
	2 - Defect in fuel system	2 - Check fuel system.
		Screw out the plug on the left of the carburetor float chamber carefully. The fuel must flow freely. Screw plug in again quickly so that the float chamber does not drain dry.
		does not drain dry.

Condition	Possible cause	What to do
		Caution Catch the fuel which runs out in a cloth. Fire danger.
	2a - Filter in fuel pump blocked	2a — If fuel does not flow freely, the filter in the fuel pump may be blocked. Take filter out and clean it.
	2b - Fuel pump damaged, float needle valve sticking	2b - If engine does not start when the filter has been cleaned and installed, see VW Dealer.
	2c - Automatic choke not working	2c - If engine does not start, even though there is fuel in carburetor, the automa- tic choke may not be working. To check choke, take air cleaner off and see if choke valve is closed when engine is cold and open when warm.
		Emergency solution: Start engine from cold with choke open by pumping with accelerator pedal. When engine is warm hold choke valve open with a piece of wire.
	2d - Engine flooded due to pumping accelerator pedal when starting	2d - Try starting with accelerator pedal fully depressed. If necessary, remove spark plugs and dry them out. Turn engine over for about 30 seconds with plugs out then install plugs again.

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Fuel and lubricants

Fuel

The Volkswagen will run satisfactorily on all normal commercial fuels which fulfil the 87 Octane requirement of the engine. If regular fuels with adequate anti-knock qualities are not available, premium fuels should be used or mixed with the regular fuel.

Engine oil

Use only good brands gasoline engine HD oil for the engine of your Volkswagen.

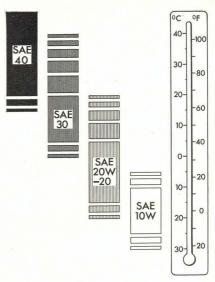
HD (Heavy Duty) is the internationally used designation for engine oils with certain characteristics. In some countries, however, the suitability of engine oils for certain operating conditions is classified according to the API system (American Petroleum Institute). With this system, HD oils suitable for the Volkswagen engines are designated "MS" or "SD".

The viscosity of the oil is usually shown by the SAE grades (Society of Automotive Engineers). The viscosity must be matched to the temperature involved and is thus dependent on the climate and on seasonal outside temperatures.

The following table is valid for Volkswagen engines only. It can be seen that the Volkswagen engine normally requires only two different viscosity grades which are selected as follows:

Tanalani assa	in hot season		SAE 40	
Tropical areas	in cool season			
	in summer		SAE 30	
Areas with a temperate climate in winter		where temperature is not normally below -15° C (5° F)	SAE 20 W-20	
	in winter	where temperature is normally down to -25° C (-13° F)	SAE 10 W *	

When the temperature is continually below -25° C (arctic areas) it is advisable to use SAE 5 W.*



As the operating ranges of neighbouring SAE grades overlap, as shown by shaded parts of sketch, **brief** variations in temperature can be disregarded. For the same reason it is also quite in order to mix oils of different viscosity if the oil in the engine is no longer correct for the actual temperature.

^{*} Do not drive at high speeds for long periods when using SAE 10 W oil if the outside temperature is above -10° C (14° F) or if using SAE 5W when the temperature is above -20° C (-4° F).

Transmission oil and ATF (Automatic Transmission Fluid)

Transmission and final drive are combined in one housing and both lubricated with the same hypoid oil to Mil – L 210 B specifications (additive basis: Sulphur-phosphor).

SAE 90 All the year generally.

SAE 80 In areas with low average temperatures.

ATF In areas with arctic temperatures (below -25° C/-13° F).

ATF is a special fluid for automatic transmissions but it can be used in the manual transmission and final drive at arctic temperatures.

All AT fluids which carry the Dexron test mark, for example, Dexron® No. B. 10 100, can be used for VW vehicles. Suitable products are supplied by all well-known mineral oil firms.

Lubricant additives

No additives of any kind should be mixed with the fuel or the lubricating oils.

Grease

- Multi-purpose grease with a lithium base should be used for the front axle, the hood locks, and the sliding surfaces of the striker plates.
- 2. Terminal grease should be used for the battery terminals and posts.

Oil Changing and Lubrication

Engine

Regular oil changes are necessary even if the very best brand of HD oil is used, because dirty oil in the engine means increased wear and reduces service life.

The oil is drained, when warm, by removing the plug in the oil strainer cover plate. Flushing is not necessary but the strainer must be removed and cleaned at every oil change. The gaskets and the copper washers under the cap nuts must always be renewed. The engine is then filled with 2.5 liters of HD oil (5.3 US pints/4.4 Imp. pints).

Due to the detergent properties of the HD oil, the fresh oil will look very dark after the vehicle has been running for only a short time. This need not worry you and under normal operating conditions there is no reason whatever to change the oil at shorter intervals than every 5000 km (3000 miles). We only recommend more frequent oil changesevery 2500 km (1500 miles) - in the winter if you drive mainly short distances and in city traffic. If you only drive a few hundred miles a month under these conditions it is advisable to have the oil changed every 6 to 8 weeks. In areas with arctic climates where average temperatures are below -25° C the oil should changed every 1250 km (750 miles).







Transmission and final drive

Transmission and final drive are combined in one housing and both lubricated with the same hypoid oil. The oil should be up to the edge of the filler hole (A).

The transmission oil is only changed at 1000 km (600 miles) by your VW workshop. Should it become necessary to change the oil because of a considerable and prolonged change in temperature (see page 63), proceed as follows.

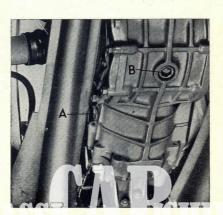
- The old oil should be drained when warm.
- The magnetic oil drain plug (B) must be cleaned carefully.
- Put in 2.5 liters of good quality hypoid oil to Mil - L 2105 specifications (additive basis: Sulphur-phosphor).

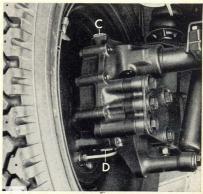
The oil sometimes runs into the transmission housing very slowly. If one attempts to put the oil in too quickly it may overflow and give the impression that the housing is already full although actually only about 1–1.5 liters have been put in. It is essential to the service life and silent running of the rear axle that the correct amount of oil is used in the transmission.

Reduction gears

The hypoid oil in the reduction gear housings is always changed together with the transmission oil.

- Take rear wheels off.
- Screw both plugs (C and D) out on each side and clear them carefully.
- Screw plug (D) back in again.
- Put in 0.25 liter of hypoid oil on each side (same sort of oil as in transmission).
- Screw plug C) back in again.

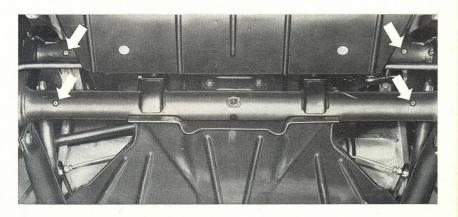




Front axle

The front axle can only be lubricated properly when the axle is free of load, that is with the front end lifted.

There are four nipples on the axle tubes which must be lubricated with a lithium-based multipurpose grease. The nipples and the grease gun nozzle should be cleaned carefully. Place gun on nipples and inject grease until fresh grease starts to come out at the torsion arm sealing rings.



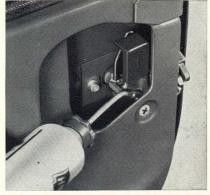
Grease and oil must not be left on tires and brake hoses for long periods. Even small traces should be wiped off immediately. If the vehicle is driven less than 10 000 km per year, the front axle must be lubricated once a year.

Hinges and locks

Above the hinge pins in the door hinges are small oil chambers which are sealed with plastic plugs. At least every 3 months the oil level should be checked after levering out the plugs with a small screwdriver. The chamber should then be filled with SAE 30 engine oil. Any oil which overflows should be caught with a cloth, the plug pressed back in again and the hinge wiped carefully.



The door and hood locks and the hood and windshield hinges should be lubricated at the same intervals.



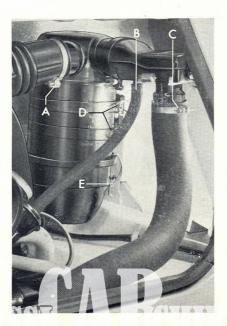
A few drops of engine oil should be put on the door locks at the places accessible from inside. The hood and windshield hinges are also oiled, but the hood locks are greased. The lock cylinders in the front door handles are treated with graphite as necessary. The key can be dipped into the graphite and then turned in the lock a few times.

The friction surfaces of the striker plates should be greased lightly with petroleum jelly.

Air cleaner

A dirty air cleaner not only reduces the engine output, it can also cause premature engine wear. If local conditions are such that the vehicle is often driven on very dusty roads, the cleaner must be checked frequently, even daily if necessary.

All the dust present in the air drawn in by the engine is retained by the filter element in the upper part of the air cleaner and washed out when the vehicle is in motion by the oil in the lower part. In time, this causes a layer of sludge to form at the bottom of the lower part.



When there is only 4-5 mm of oil above the sludge layer, the lower part must be cleaned and filled with fresh oil. The cleaner must be removed to do this:

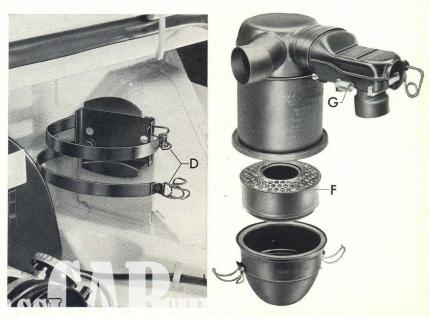
- Loosen Phillips screw (A) in hose and pull carburetor intake pipe off.
- Pull crankcase breather pipe (B) off air cleaner.
- Loosen Phillips screw (C) in hose clip and pull preheated air pipe off air cleaner.
- Release the two clips (D) and take air cleaner out of engine compartment holding it vertical.
- Release two clips (E), take upper part of and put it down in a vertical position.
- Take filter insert (F) out of cleaner lower part.
- Clean lower part thoroughly and fill it to the mark with fresh oil.

The amount of oil required is about 0.4 liter (0.7 pint). SAE 30 engine oil is used normally but in areas with an arctic climate SAE 10 W engine oil should be used all the year.

The upper part of the cleaner and the filter insert do not usually need cleaning However, if the filter insert has become so dirty due to delayed cleaning or oil shortage that the

air inlet holes on the underside are partly blocked, the encrusted dirt should be scraped off with a chip of wood.

Before installing the cleaner, check that the control flap (G) moves easily.



Technical Data

Engine

Four-cylinder, four-stroke, horizontally opposed in rear. Air cooling by fan, thermostatically controlled. Pressure oil feed with gear-type pump, oil cooler, mechanical fuel pump, downdraft carburetor with automatic choke and accelerator pump, oil bath air cleaner with thermostatically controlled air preheating.

Bore	85.5 mm
Stroke	69 mm
Capacity	1584 cc
Compression	6.6
Maximum output DIN SAE	44 bhp at 3800 rpm 53 bhp at 4200 rpm
Maximum torque DIN SAE	10 mkg at 2000 rpm 72.6 ft. lb. at 2500 rpm
Fuel consumption (DIN 70030 ¹)	11.0 liters per 100 km 25.6 miles per gallon
Fuel rating	87 Octane (Res. F1)
Oil consumption	0.5-1.0 liter per 1000 km
Valve clearance with engine cold	1.7-3.4 pints per 1000 miles inlet and exhaust 0.10 mm (0.004 in)

¹⁾ Measured consumption plus 10%, with half load at a 3/4 of maximum speed on level road, no wind.

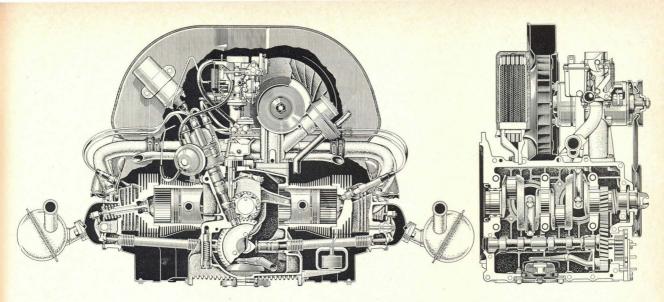
Transmission

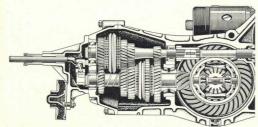
Baulk synchronized four-speed gearbox with bevel gear differential in one housing. Dry single plate clutch, clutch pedal free play: 10-20 mm.

Gear ratios: 1st gear 3.80; 2nd gear 2.06; 3rd gear 1.22; 4th gear 0.82; reverse gear 3.61. Final drive ratio 3.875.

Reduction gear ratio 1.26.

Swing axles





Chassis

Platform frame with tunnel shaped center member.

Front axle bolted to frame head and with reinforcement between frame and axle beam, engine/transmission unit bolted to frame fork.

Independent suspension: cranked trailing links at front, swing axles with reduction gears on trailing arm at the rear.

Torsion bar springing, telescopic shock absorber, stabilizer at front, equalizer spring at rear.

Roller steering with maintenance-free tie-rods and hydraulic steering damper.

Footbrake: hydraulic dual circuit system, with optional warning light.

Handbrake: mechanical, effective on rear wheels.

Wheelbase 2400 mm (94.5 in)

Turning circle approx. 11 m (36 ft)

Track at front 1354 mm (52.3 in)

Total wheel toe (unladen) + 30' \pm 15' (1.8–5.4 mm)

Camber (unladen) 30' ± 20'

Track at rear 1446 mm (56.9 in)

Wheels 5 TK x 14 steel discs

with drop center

Tires 185 SR 14 M + S

with tubes

Tire pressures (with maximum load)

front 1.3 kg/cm² (18 psi)

rear 1.9 kg/cm² (27 psi)

These pressures are for cold tires

Electrical system

Voltage 12 volt

Battery 36 Ah (or 45 Ah on request)

Starter 0.8 hp

Generator max. 30 ampere, early cut-in

Fan belt 9.5 x 905 mm LA "DA" or 9.5 x 905 mm LA "XDA" or 9.5 x 900 LA "DA"

Belt tension 9-11 mm deflection * (new belt) 11-14 mm deflection * (used belt)

Distributor with centrifugal and vacuum spark advance

Firing order 1-4-3-2

Basic ignition timing 7.5° before TDC at 900 rpm**

Contact breaker gap 0.4 mm (0.016 in)

Spark plugs Bosch V 145 T 1,

Beru 145/14, Champion L 88 A or plugs with similar values from other manufacturers.

Plug thread 0.7 mm (0.028 in) * Measured with a pressure of 7.5 kg in the center between the pulleys.

14 mm ** Check with stroboscopic lamp, vacuum hoses off, engine warm

Caravans or trailers for

. .

Dimension and weights

Plug gap

Length	3780 mm (148.75 in)	Unladen weight	900 kg (1984 lbs)
Width	1640 mm (64.5 in)	Payload	440 kg (970 lbs)
Height	1620 mm (63.7 in)	Gross vehicle weight	1340 kg (2954 lbs)
Ground clearance (with full load)	205 mm (8 in)	Permissible front axle load	550 kg (1212 lbs)
Ramp clearance	145 mm (5.7 in)	rear axle load	800 kg (1763 lbs)
Wading depth	396 mm (15.6 in)	Permissible trailer weights 1)	
Approach angle	36°	Trailer with brakes	500 kg (1100 lbs)
Departure angle	31°	without brakes	400 kg (880 lbs)

1) Subject to local regulations which may differ.

carrying boats or gliders with brakes 650 kg (1433 lbs)

Capacities

Fuel tank 40 liters (8.8 gallons) 2.5 liters (4.4 pints) Engine Transmission and final drive 3.0 liters (5.25 pints)

Reduction gears each 0.25 liter (0.44 pint) 2.5 liters at oil changes approx. 0.25 liter (0.44 pint) Brakes Oil bath air cleaner approx 0.4 liter (0.7 pint) Windshield washer approx. 1.7 liters (3 pints)

Performance

Maximum and cruising speed 110 km/h (68 mph)

Acceleration time from

0-80 km/h (0-50 mph) 16.4 seconds

Climbing ability 1)

1st gear 55 % 29 % 2nd gear 3rd gear 15.5 % 9 % Top gear

¹⁾ Measured on good roads, vehicle with two occupants, continuous run.

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Ve	hicle data quiz	
•	What sort of fuel does your vehicle require?	Regular fuel, minimum Octane rating 87.
•	What sort of engine oil?	HD oil for gasoline engines
		SAE grade (viscosity) according to time of year. Further details on page 62. In some countries HD oil is known as "MS" or "SD" oil.
•	What is the difference in quantity between the minimum and maximum marks on the dipstick?	1.25 liters
•	How often should the engine oil be changed?	At 1000, 5000 and then every 5000 km (600, 3000 and every 3000 miles).
•	What sort of oil is used in gearbox and final drive?	SAE 90 Hypoid oil to MIL-L 2105 B specifications (additive basis: Sulphur-phosphor) or SAE 80 in areas where average temperature is low.
•	When is the gearbox and final drive oil changed?	Only at 1000 km (600 miles).

Every 10,000 km or once a year if this mileage is not attained in a year.

greased?

How often should the front axle be

How much brake fluid should there be in the reservoir?	The fluid should be level with the lip roun	nd the contair	er.
Which spark plugs should be used?	Bosch W 145 T 1, Beru 145/14, Champion L 88 A		
	or other plugs with similar values as quo	ted by manufa	acturer.
Is the fan belt tension correct?	It should deflect 11–14 mm in the cente the thumb (about 7.5 kg). A brand new belt should only deflect 9–11 Belt designations 9.5 x 900 LA "DA" 9.5 x 905 LA "DA"		e pulleys when pressed firmly with
Are the wheel bolts tightened properly?	9.5 x 905 LA "X DA"		
The the wheel boils lightened properly?	The torque should be 10 mkg.		
What are the correct time and a		front	rear
What are the correct tire pressures?	Spare wheel 3 kg/cm ² .	1:3	1.9 kg/cm ²

Where are the fuses
 Under the instrument panel on the left near the steering column.

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